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# PARKING MASTER PLAN STUDY

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Boston, Massachusetts

Vanasse Hangen Brustlin, Inc.

June, 1988

# PARKING MASTER PLAN STUDY

## CHILDREN'S MEDICAL CENTER

## BOSTON, MASSACHUSETTS

June, 1988

prepared by

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## EXECUTIVE SUMMARY

The Children's Hospital Parking Master Plan Study, prepared for inclusion in the Children's Medical Center Master Plan, describes existing parking conditions, five-year parking needs, and proposed parking supply and management options for its Longwood Medical Area (LMA) campus.

There are approximately 1,622 parking spaces controlled by Children's and are currently available for use by the Children's community (employees, patients and visitors). Two-thirds of these spaces are located in nearby parking areas within walking distance while the remainder are in off-site parking facilities which require shuttle-services to and from the LMA. This system is fully utilized during the day, forcing some parkers to seek alternate parking in one of the other parking facilities elsewhere in the LMA or to park in on-street locations.

The analysis of parking supply and demand included the results of a series of questionnaire and interview surveys determining the percentage of respondents who drive to the hospital and where they park upon arrival. On average, approximately one-half of daytime employees and two-thirds to three-fourths of patients and visitors arrive by automobile. Between 87 and 95 percent of staff members, and approximately 70 percent of patient families and visitors park in facilities controlled by Children's Hospital. When these data are applied to the daily population estimates, the results of the analysis show that at 2:00 PM on a typical weekday, the estimated demand for parking currently exceeds the available patient/visitor supply by 232 spaces. For staff, the estimated demand exceeds the available supply by 251 spaces. In total, the existing demand exceeds the available parking supply by 483 spaces.

Over the next five years, the shortfall in parking supply is expected to increase as a result of increased patient demand, growth in staff, and a loss of some parking facilities (including the Western Avenue garage and potentially the Beacon Street and Fenmore parking areas total 266 spaces). As a result, the future parking shortfall was estimated to range between 288 and 554 staff parking spaces and 314 patient/visitor parking spaces.

A series of parking supply improvement options were developed to address current and projected parking shortfalls. The supply options for patients and visitors include:

- constructing a new parking structure on the site of the existing Gardner House building,
- providing 430 parking spaces overall and 350 new parking spaces for patient/visitor use, and
- the replacement of the existing 434 space Blackfan Garage with a similarly-sized structure.

Staff supply options include:

- a 394 space parking deck on the site of the existing (194 space) Emmanuel College parking lot,
- 115 additional parking spaces in the proposed Temple Israel garage, and
- a new off-site parking facility which would add 400 parking spaces.

In addition to providing new parking for patients, visitors, and employees, Children's is committed to reducing the demand for

parking by encouraging the use of alternative modes of transportation. This includes a comprehensive parking pricing and parking management evaluation of the Longwood Medical Area.

This report details and describes the parking alternatives available to Children's and provides a summary of the advantages and disadvantages of each option.

# EXISTING CONDITIONS

## A. INTRODUCTION

This section of the Children's Medical Center Master Plan was developed in response to a specific request by the Boston Redevelopment Authority to address detailed parking characteristics at Children's. It incorporates an evaluation of the current parking requirements at Children's and the identification of strategies to address current and future needs at the Medical Center.

## B. INVENTORY

### 1. Existing Parking Supply

There are approximately 1,622 parking spaces currently available for use by Children's employees, patients and visitors which are under the jurisdiction of the Children's Hospital Parking and Transportation Office. These can be divided into two categories of off-street parking facilities: 1) 1,073 nearby parking spaces within walking distance of the hospital (within the LMA) and 2) 549 parking spaces in locations requiring a shuttle bus service to and from the hospital. The facilities within walking distance are illustrated in Figure 1. Also shown in this figure are other LMA parking facilities within walking distance of Children's which are open to the general public. A more detailed description of the nearby and off-site facilities follows.

#### • Parking Facilities Within Walking Distance of Children's

Table 1 presents a summary of the parking facilities located within walking distance of Children's. Shown for each parking area is a number corresponding to its location in Figure 1, its name, the controlling institution, its legal capacity, the number

### TABLE 1
### PARKING SUPPLY WITHIN WALKING DISTANCE OF CHILDREN'S HOSPITAL
### (Controlled by Children's Hospital)

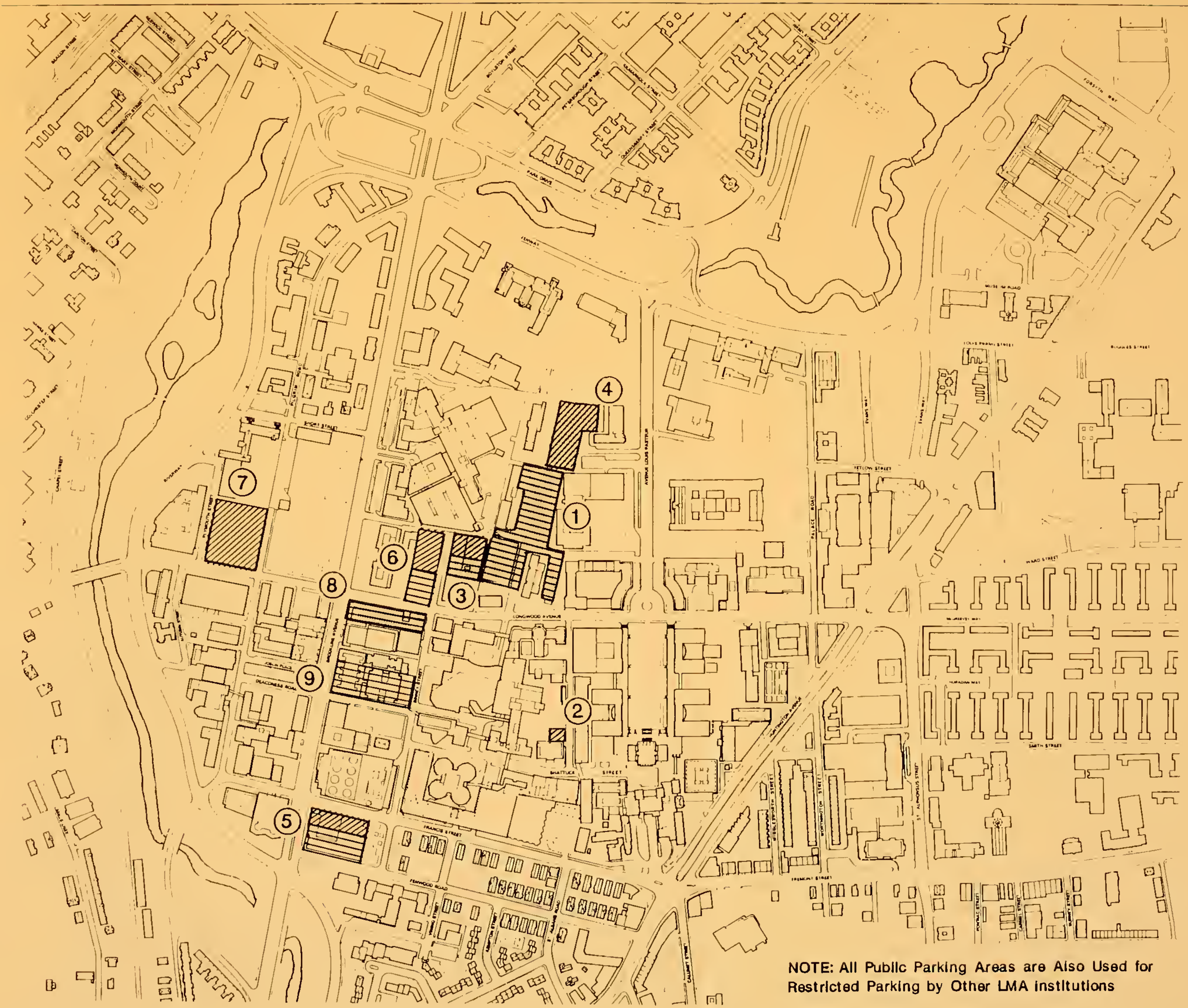
| Name Of Facility | Facility ID Number | Type Of Facility | Ownership Of Facility | Capacity Of Facility | Spaces Available to Children's | Type Of Parker | Monthly Cost To Employees |
|---|---|---|---|---|---|---|---|
| Blackfan Area | 1 | GARAGE/LOT | CH | 610 | 474 | PAT/VIS, 2ND | NA |
| Wolbach | 2 | LOT | CH | 7 | 7 | VIP | $99 |
| Longwood North | 3 | GARAGE | CMC | 495 | 177 | PHY, SENIOR STAFF | $99 |
| Emmanuel College | 4 | LOT | CMC | 194 | 100 | HOUSE STAFF | $69 |
| Service Center | 5 | GARAGE | MASCO | 650 | 150 | PHY, N, DH | $99 |
| Temple Israel | 6 | LOT | MASCO | 245 | 135 | SENIOR STAFF | $86 |
| Mass. College of Art | 7 | LOT | MASCO | 138 | 30 | SENIOR STAFF | $99 |
| Total | | | | 2,339 | 1,073 | | |

CH = CHILDREN'S HOSPITAL
CMC = CHILDREN'S MEDICAL CENTER
PHY = PHYSICIANS
N = NURSES
DH = DEPARTMENT HEADS
VIP = HIGHEST LEVEL STAFF
NA = NOT APPLICABLE
2ND = 2nd and 3rd Shift Employees
MASCO = Medical Area Service Corporation

Note: Parking spaces currently priced at $99 per month will increase to $104 effective July 1, 1988. Second Shift employees parking in the Blackfan parking area pay $45 per month.

Source: Children's Hospital Parking and Transportation Office.

# Parking Facilities Within Walking Distance of Children's Hospital



NOTE: All Public Parking Areas are Also Used for Restricted Parking by Other LMA institutions

▭ Children's Facility
▭ Non-Children's Facility
▨ Staff Parking
☰ Public Parking
⊗ I.D. Number

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0 250 500
SCALE IN FEET

Fig. 1

of spaces available for use by Children's and a description who parks in these spaces.

As shown in Table 1, the largest supply of Children's-related parking is the Blackfan parking area, where 474 patient/visitor spaces are located. Children's supply in the Blackfan area is designated for use by patients and visitors only before 12:30 PM. After 12:30 PM approximately 100 second shift employees are permitted to park in this area also. Third shift employees, employees working double shifts, and disabled employees are also allowed to enter/exit the Blackfan area with special cards issued by the Parking and Transportation Office.

Because all access to parking on Blackfan Street north of Longwood Avenue is provided via a gate control system run by Children's, the parking spaces for the Judge Baker Children's Center (32 spaces) and Harvard Medical School (104 spaces) are also controlled by Children's by arrangement with these institutions. Non-children's parkers are issued special cards which enable them to enter and exit the gate controlled parking area.

The remaining 599 on-site spaces are designated for use by those members of the hospital staff who need convenient parking near the hospital due to the nature of their job (ie. physicians, nurses and senior administrators) and for senior staff members. A monthly fee of $99 is currently charged to all employees who park within walking distance with two exceptions: 1) members of the house staff (medical students) pay a monthly fee of $69 to park at Emmanuel College and those who park at the Temple Israel lot pay $86 per month. The monthly cost for these spaces will be increased by five percent on July 1, 1988.

### • Off-Site Facilities Requiring Shuttle Bus Service

Table 2 presents a detailed summary of the off-site parking areas requiring shuttle bus service to and from the hospital. Shown for each facility is its name, the name of the controlling institution, its legal capacity, and the number of spaces which are available for use by Children's.

A total of approximately 549 off-site parking spaces are currently available in five different locations for use by Children's employees. Three of the parking facilities are owned by the Children's Medical Center (CMC) while the remaining two facilities are controlled by the Medical Area Service Corporation (MASCO).[1] Children's employees pay $45 per month to park in any of these facilities.

## 2. Allocation of Children's Parking Supply

Of the 1,622 total off-street spaces available to the Children's Hospital community, most are allocated to either staff or patient/visitor use. The Blackfan parking area and the adjacent Longwood North garage are the two facilities where these two groups of parkers compete for spaces as described below.

### • Staff Parking Supply

Currently, of the 1,622 total spaces, approximately 1,148 parking spaces are available for exclusive use by Children's employees. Of these, 549 spaces are located in off-site facilities and require parkers to take a shuttle bus to the hospital and the remaining 599 spaces are located within walking distance of Children's.

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[1] One of these facilities, the Western Avenue garage, soon will no longer be offered through MASCO due to poor utilization levels.

## TABLE 2
## PARKING FACILITIES REQUIRING SHUTTLE SERVICE TO CHILDREN'S HOSPITAL

| Name Of Facility | Type Of Facility | Ownership Of Facility | Capacity Of Facility (spaces) | Spaces Available to Children's | Monthly Cost To Employees |
|---|---|---|---|---|---|
| Huntington/Ruggles | LOT | CMC* | 213 | 213 | $45 |
| Beacon Street | LOT | CMC | 200 | 170 | $45 |
| Fenmore | LOT | CMC | 81 | 81 | $45 |
| Prentiss/Wentworth | LOT | MASCO | 380 | 70 | $45 |
| Allston | LOT | MASCO | 350 | 15 | $45 |
| Total | | | 1,224 | 549 | |

* CMC = CHILDREN'S MEDICAL CENTER

Source: Children's Hospital Parking and Transportation Office
Note: Off site parking spaces will increase in price to $47.50 per month effective July 1, 1988.

### • Patient/Visitor Parking Supply

Currently, Children's Hospital provides approximately 474 spaces for patient and visitor parking in the Blackfan parking area. In addition to hospital-owned spaces, there are a total of approximately 673 public spaces in the LMA (within walking distance) that are available for use by patients and visitors, and these are included in Figure 1. These additional spaces are in non-hospital-owned facilities within walking distance to Children's, including: 188 public spaces in the 495 space Longwood North garage (where Children's staff are also allowed to park); 35 public spaces located in the 342 Longwood Avenue (Galleria) garage; 144 spaces located in the 44 Binney Street garage (controlled by the Dana Farber Cancer Institute); 248 public spaces in the Servicenter Garage; and, 58 spaces located in the Mass. College of Art lot, which is operated by MASCO.

### TABLE 3
### PARKING SUPPLY WITHIN WALKING DISTANCE OF CHILDREN'S HOSPITAL
### (Controlled by Other Institutions)

| Name Of Facility | Facility ID Number | Type Of Facility | Ownership Of Facility | Capacity Of Facility | Public Spaces Available |
|---|---|---|---|---|---|
| Longwood North | 3 | GARAGE | CMC * | 495 | 188 |
| Service Center | 5 | GARAGE | MASCO ** | 650 | 248 |
| Mass. College of Art | 7 | LOT | MASCO | 138 | 58 |
| Longwood Galleria | 8 | GARAGE | CMC | 110 | 35 |
| Dana Farber | 9 | GARAGE | Dana Farber | 244 | 144 |
| Total | | | | 1,637 | 673 |

* CMC = Children's Medical Center
** MASCO = Medical Area Service Corporation
Note: Longwood North garage is only partially-owned by CMC.

Based on the patient/visitor interview surveys discussed later in this chapter, this additional non-Blackfan supply is currently being used by some patients and visitors to Children's, reflecting the perception by some individuals that adequate parking is not available in the Blackfan parking area, the designated patient/visitor parking area for Children's Hospital.

### 3. Hospital Access/Egress and Circulation System

A detailed summary of the access/egress system at Children's is presented in the Longwood Medical Area Transportation Study prepared for the Medical Area Service Corporation (MASCO) by Vanasse Hangen Brustlin.[2] This study describes existing land uses in the LMA, transportation system characteristics, and provides detailed summaries of area travel patterns and roadway/ transit system performance. The study illustrated numerous system and locational deficiencies which were evaluated. Specific solutions were developed and recommended in a subsequent memorandum. This parking master plan study incorporates the major findings of the LMA study as they relate to parking at Children's.

## C. PARKING SYSTEM UTILIZATION

### 1. Parking Usage Characteristics

Based on a series of limited field observations and discussions with Children's staff, the off-site parking spaces allocated to Children's employees are fully utilized.

Vanasse Hangen Brustlin observed and analyzed parking usage characteristics in the Blackfan parking area as well as in the

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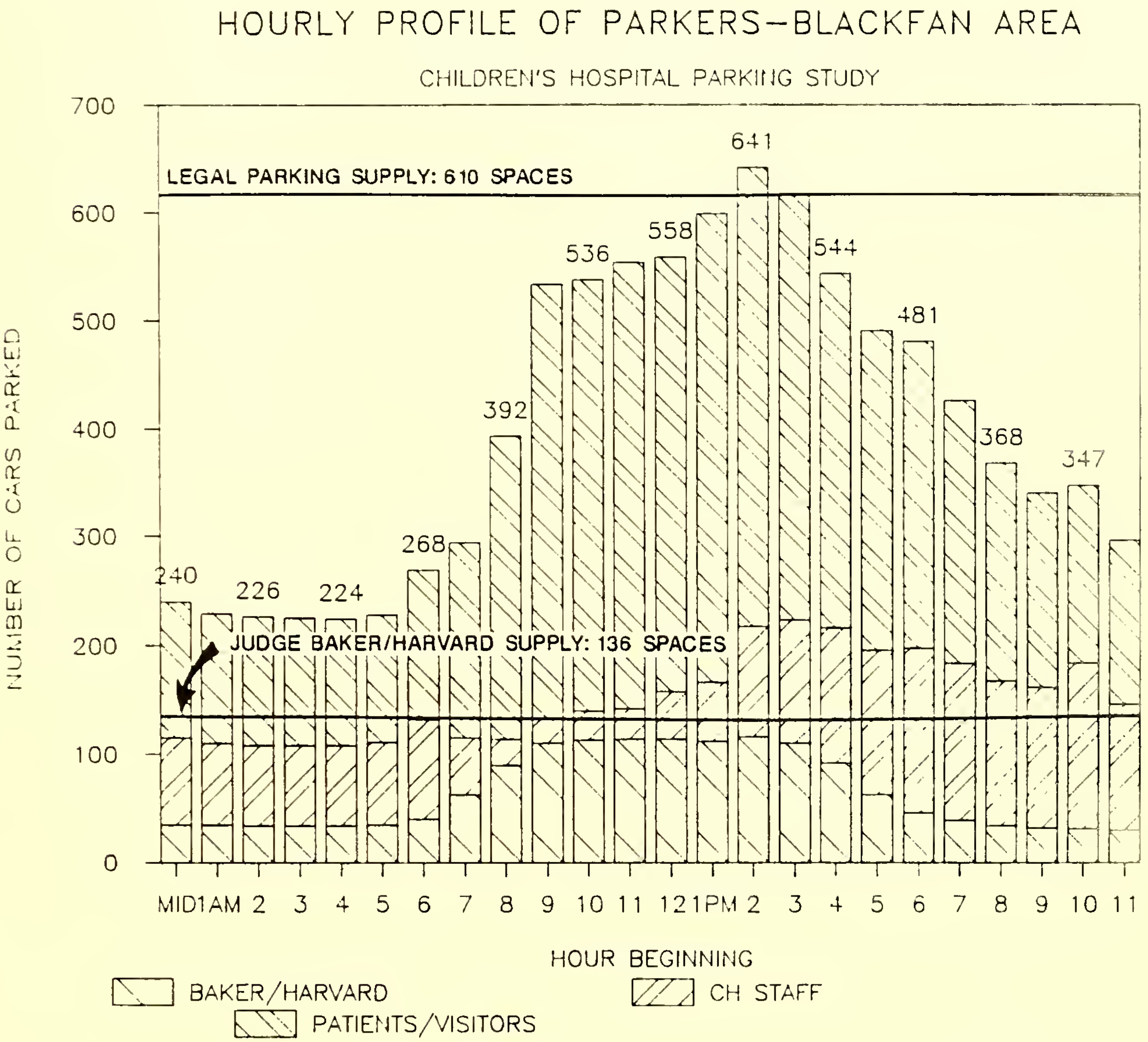
[2] Refer to Longwood Medical Area Transportation Study, Technical Memorandum #1, Summary of Existing Conditions, Vanasse Hangen Brustlin, Inc., November, 1987.

Longwood North garage. Included was a review of historical utilization data provided by Children's and by the garage management at Longwood North. Vanasse Hangen Brustlin developed a profile of usage characteristics from this information for the Blackfan parking area which separates the number of vehicles parked for each hour into Judge Baker/Harvard parkers, Children's staff parkers and public parkers. This profile is presented in Table 4 and Figure 2.

TABLE 4
DAILY UTILIZATION OF BLACKFAN PARKING AREA
March 30, 1988

| | Number of Vehicles Parked | | | |
|---|---|---|---|---|
| Hour Beginning | Patients/ Visitors | Children's Staff | Judge Baker/ Harvard | Total |
| 12 Midnight | 125 | 80 | 35 | 240 |
| 1 AM | 119 | 75 | 35 | 229 |
| 2 AM | 118 | 74 | 34 | 226 |
| 3 AM | 117 | 74 | 34 | 225 |
| 4 AM | 116 | 74 | 34 | 224 |
| 5 AM | 117 | 76 | 35 | 227 |
| 6 AM | 137 | 92 | 40 | 268 |
| 7 AM | 179 | 52 | 63 | 293 |
| 8 AM | 279 | 24 | 90 | 392 |
| 9 AM | 401 | 23 | 110 | 532 |
| 10 AM | 398 | 27 | 113 | 536 |
| 11 AM | 412 | 28 | 114 | 553 |
| 12 Noon | 401 | 44 | 114 | 558 |
| 1 PM | 433 | 54 | 112 | 598 |
| 2 PM | 425 | 101 | 116 | 641 |
| 3 PM | 395 | 113 | 110 | 618 |
| 4 PM | 328 | 124 | 92 | 544 |
| 5 PM | 296 | 132 | 63 | 491 |
| 6 PM | 284 | 151 | 46 | 481 |
| 7 PM | 243 | 144 | 39 | 426 |
| 8 PM | 201 | 133 | 34 | 368 |
| 9 PM | 179 | 129 | 32 | 340 |
| 10 PM | 164 | 152 | 31 | 347 |
| 11 PM | 150 | 116 | 30 | 296 |

Note: Total parking supply is 610 spaces.



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# Blackfan Parking Area Utilization Profile

Fig. 2

As shown in the figure and the table, between 2:00 PM and 3:00 PM on March 30, 1988 (a representative high use day), the number of parked cars (641) exceeds the legal supply (610 spaces) by approximately 31 cars. During the peak time, 116 cars were parked in the 136 spaces allocated to Judge Baker and Harvard indicating that the remaining spaces were utilized by Children's parkers. In addition, during this time, 425 patient/visitor vehicles were estimated to be parked in the Blackfan area. This accumulation is slightly less than the 470 space supply allocated to patients and visitors. The remaining spaces were occupied by staff with second shift parking privileges (101 vehicles).

## 2. Transportation and Parking Survey Questionnaire Results

A transportation and parking questionnaire survey, administered by Children's, was distributed during the month of February, 1988 to all Children's employees. This survey was conducted to determine the travel characteristics of all categories of staff members. These characteristics include time of arrival and departure, mode of travel to the hospital, parking location and price sensitivity questions. Approximately 3,900 surveys were mailed to hospital staff and 706 were returned, an 18 percent rate of return.

A principal reason for conducting the questionnaire survey was to identify how the available parking supply is used and to determine how employees might respond to changes in the parking and transportation system. The responses to questions provide information on the travel patterns of each user group, how many people take their cars to the hospital, when they arrive and when they depart, and where they park their cars. From this information, the parking demand during the peak period of the day can be determined and future projections of parking demand by employee category can be made.

When asked to indicate the mode most often used to arrive at Children's, the responses varied by employee category and by work schedule. Those employees working the day shift only were less likely to drive to work than those who work the evening or night shifts. Table 5 provides a summary of mode to work according to the various employee categories for day, evening and for employees working rotating shifts.

TABLE 5
PERCENTAGE OF EMPLOYEES WHO DRIVE TO WORK *

| Employee Category | Days Only | Evenings | Days/Evenings |
|---|---|---|---|
| Physicians | 60.3% | | 83.3% |
| Nurses | 52.6% | 93.8% | 83.8% |
| Technicians | 32.5% | 75.0% | 100.0% |
| Administration | | | |
| - Managers | 64.4% | | |
| - Support | 45.7% | 100.0% | 100.0% |
| Other Medical Staff | 58.2% | | 33.3% |
| AVERAGE | 52.4% | 91.7% | 83.9% |

* Includes all employees who drive and park in areas within walking distance as well as off-site lots requiring shuttle services.

As shown in the table, during the day shift, an average of 52.4% of Children's employees drive to work and park both in nearby lots and areas requiring shuttle service to the hospital. This ranges from a high of 60.3% for physicians to a low of 45.7% for administrative support staff. Evening shift nursing employees, who arrive between the hours of 12:30 PM and 3:00 PM, have a much higher propensity to travel by automobile, with an average of 91.7% of those surveyed indicating they drive. Employees who work rotating or double shifts also have a greater tendency to travel by car with 83.9% reporting that they drive and park.

Approximately 47 percent of those who drive park in lots or garages within walking distance of Children's while 40 percent park in an off-site lot requiring a shuttle bus. The remaining 13 percent park in other parking areas within the LMA which are not under Children's control.

Approximately one-third of the respondents offered some form of comments on their survey form, a very high level of response. The major areas of comment were with respect to the cost of parking, the quality of shuttle services and the availability of convenient parking.

The results of the questionnaire survey were used to assist in the determination of staff parking supply/demand relationship for existing and future conditions as described below.

## 3. Patient/Visitor Interview Survey Results

On Tuesday, March 22, 1988 an interview survey was administered to a sample of patient parties, patient visitors and business visitors entering the hospital between 7:30 AM and 3:30 PM. The interviewing was conducted at the main entrance of the hospital and at the Fegan Building reception desk and waiting area.

Persons surveyed were asked questions regarding which physician or clinic they were visiting, the purpose of their trip, their mode of travel to the hospital, and other transportation-related questions. For the purposes of this analysis, the person surveyed was usually a relative of the patient. A patient party, therefore, is defined as any group of individuals traveling to Children's Hospital for the purposes of treatment or visitation to a single patient.

A total of 329 patients and visitors were interviewed on

Tuesday, March 22, 1988. Of these, 179 were patient parties (54 percent), 95 were patient visitors (29 percent) and 55 were business visitors (17 percent). Of the patient parties interviewed, 24 percent indicated that they were going to see a doctor with the remaining visiting various clinics including allergy (16 percent), medical (13 percent), surgical (10 percent) and others (37 percent).

When asked about their mode to the hospital, 64 percent of patient families, 77 percent of patient visitors, and 74 percent of business visitors arrived by automobile. The responses to the question on parking location for those who drove, is presented in Table 6.

TABLE 6
DISTRIBUTION OF PARKING LOCATION-PATIENTS/VISITORS

| Parking Location | Patient Parties | Patient Visitors | Business Visitors |
|---|---|---|---|
| Blackfan Area | 70% | 70% | 13% |
| Longwood North | 14% | 20% | 32% |
| On-Street | 11% | 4% | 10% |
| Dana Farber | 3% | 6% | 45% |
| Other | 2% | 0% | 0% |
| TOTAL | 100% | 100% | 100% |

As indicated in the table, most patient parties and patient visitors park in the Blackfan area but 16 percent of patient parties and 10 percent of patient visitors park in non-Children's facilities. The use of these other parking areas can be explained by either a lack of awareness about where Children's parking is located or is based on a perception that convenient parking is not available in the designated patient/visitor spaces.

# ASSESSMENT OF PARKING SUPPLY NEEDS

## A. EXISTING PARKING DEMAND

The analysis of parking demand at Children's falls into two categories: staff demand and patient/visitor demand. Each of these groups of parkers has unique parking requirements: patient/visitor demand peaks between 1:00 and 2:00 PM when patient demands are diminishing and visitor demands are increasing; staff demand peaks between 2:00 PM and 3:00 PM when the medical shift changes. The analysis presented below is intended to estimate a theoretical demand for parking, based on estimates of the population at the hospital at 2:00 PM. The results of the questionnaire and interview surveys were applied to these population estimates to develop a theoretical peak parking demand.

### 1. Staff Parking Demand

Between 2:00 and 3:00 PM, when the medical shift change occurs, parking demands for the day shift and evening shift overlap. Table 7 summarizes the estimates of existing Children's staff parking requirements during this critical period compared to the available supply. As shown in the table, the peak staff demand is estimated at a total of 1,399 vehicles. This is comprised of 848 vehicles parking in nearby facilities and 551 vehicles parked in non-LMA parking spaces under Children's control. The demand exceeds the available supply of 1,148 spaces available for staff parking by a total of 251 vehicles (including 249 vehicles in nearby lots and 2 vehicles in non-LMA facilities).

To compensate for this staff parking shortfall, Children's grants parking privileges to approximately 100 parkers in the Blackfan parking area for second shift staff use. This results in a net existing shortfall of 151 spaces. With approximately 71

parkers utilizing parking in other LMA parking facilities either at other institutions or in publicly-available parking lots, the adjusted existing peak period shortfall is 80 parking spaces.

TABLE 7
EXISTING STAFF SUPPLY/DEMAND RELATIONSHIP

| | Number of Spaces | | |
|---|---|---|---|
| Supply/Demand Category | Nearby | Non-LMA | Total |
| Available Parking Supply | 599 | 549 | 1,148 |
| DEMAND | | | |
| Daytime Employee Demand | 559 | 551 | 1,110 |
| Evening Employee Demand | 289 | 0 | 289 |
| Total Staff Demand at Peak | 848 | 551 | 1,399 |
| Parking Deficit | -249 | -2 | -251 |
| ADJUSTMENTS | | | |
| Second Shift Supply-Blackfan | 100 | -- | 100 |
| Other LMA Supply (See Note 2 Below) | 71 | -- | 71 |
| Total Adjustments | 171 | -- | 171 |
| Adjusted Deficit | -78 | -2 | -80 |

Notes:

1. Nearby facilities include Emmanuel College, Temple Israel, Mass. College of Art, 333 Longwood, The Servicenter and Wolbach. Non-LMA facilities include Beacon Street, Fenmore, Prentiss/ Wentworth, Huntington/Ruggles, and Allston garage.
2. Between 5 percent and 13 percent of employees who drive to the LMA and park use non-Children's facilities, depending on their employment category. An estimated 71 Children's staff members park in non-Children's-controlled facilities.

## 2. Patient/Visitor Demand

Parking requirements were also estimated for patients and

visitors at 2:00 PM and are summarized in Table 8. As shown in the table, the estimated peak demand for patient parties (parent(s) and children), patient visitors, business visitors and volunteers at 2:00 PM is 642 spaces. When a 10 percent adjustment to account for space turnover and the search for a space is included as an optimal design for "practical supply", the peak demand design figure is increased by 64 spaces to 706 spaces. The available supply under Children's control is 474 spaces, resulting in an existing peak period deficiency of 232 spaces.

As mentioned previously, the results of the patient/visitor interview surveys indicated that of those who park in the LMA, 30 percent of patients and patient visitors and 87 percent of business visitors park in facilities other than the Blackfan parking area. Because other spaces within walking distance of Children's are not under direct control of the hospital, these spaces were not included in the supply/demand equation.

### 3. Summary of Existing Supply/Demand Conditions

As mentioned above, some staff, patients and visitors traveling to Children's park in other parking areas within the LMA. A key purpose of this element of the Master Plan study is to identify the level of Children's-generated parking demand and to develop strategies to meet that demand in facilities controlled by Children's. Accordingly, at 2:00 PM, the estimated demand for parking, including a 10 percent adjustment for patient/visitor turnover, exceeds the available patient/visitor supply by 232 spaces. For staff, the estimated demand, excluding parking in the Blackfan (patient/visitor) parking area and other parking areas, exceeds the available supply by 251 spaces. In total, the existing demand exceeds the available parking supply by 483 spaces.

### TABLE 8
### PATIENT/VISITOR SUPPLY/DEMAND RELATIONSHIP
### 2:00 PM ON A TYPICAL WEEKDAY

| Category | Number of People Present | Percent By Car | Peak Demand (spaces) |
|---|---|---|---|
| Outpatient | 424 | 63% | 267 |
| Emergency Room | 40 | 80% | 32 |
| Patient Visitor | 295 | 77% | 227 |
| Volunteers | 43 | 60% | 27 |
| Business Visitor | 120 | 74% | 89 |
| Total Demand | 922 | 69.6% | 642 |
| Practical Supply Adjustment (10%)<br>(to account for space turnover) | | | + 64 |
| Total Adjusted Demand | | | 706 |
| Available Patient/Visitor Supply in Blackfan Parking Area | | | 474 |
| Shortfall-Demand not met in Blackfan Parking Area (474-706=-232) | | | -232 |

Notes:

1. The daily population estimates for outpatients, patient visitors and emergency room users, expressed in terms of "patient parties," are from Carr, Lynch Associates, Inc. Business visitor population estimates are from Vanasse Hangen Brustlin surveys. Volunteer population estimate is from Children's.

2. Percent by car estimates for volunteers and emergency room patients is from Carr,Lynch. All others are from VHB surveys.

## B. ANALYSIS OF FUTURE PARKING SYSTEM CONDITIONS

With a shortfall of 483 parking spaces for staff, patients and visitors under existing conditions, several parking supply enhancements are needed. Some of the available alternatives are addressed later in this report, but prior to developing new supply, an analysis of future areas of increased parking demand was conducted. This is summarized in the following paragraphs.

### 1. Future Staff Supply/Demand Relationship

While no reduction is anticipated in the patient/visitor parking supply, the off-site staff supply is less permanent and subject to change. The analysis of the future staff supply/demand relationship assumes that up to 266 parking spaces (15 spaces in the Western Avenue garage in Allston, 170 spaces in the Beacon Street lot and 81 spaces in the Kenmore parking lot) could be eliminated in the future. Currently, the buildings on the Fenmore properties, of which the Beacon Street and Kenmore parking lots are a part, are used for low-density warehouse purposes. As the tenant profile changes, the demand for parking will likely increase and it is assumed that the 251 spaces leased to Children's will eventually be lost. In addition, there is the potential that the 213 space parking lot at Huntington/Ruggles, currently leased from Wentworth Institute of Technology, could also be lost in the future.

The estimate of future staff parking demand assumes a small increase in employment (a net increase of 3 percent over five years), the elimination of some staff vacancies (50 positions out of the current 200 vacancies) and the transfer of some Children's facilities now in buildings in the LMA to off-site locations (affecting 90 employees). The results of the future staff supply/demand analysis are presented in Table 9. As shown, parking demand is expected to increase by up to 108 parking spaces to 1,507 spaces at the peak. This exceeds the existing supply under Children's control by 288 spaces. This shortfall is comprised of 188 nearby spaces and 100 off-site spaces.

As indicated in Table 9, with the elimination of up to 266 off-site spaces, which are now leased by Children's, the overall deficit could increase to 554 spaces. Several alternatives have been developed to address this supply shortfall and these are outline in the next section of this chapter.

# TABLE 9
## FUTURE STAFF SUPPLY/DEMAND RELATIONSHIP

| Supply/Demand Category | Number of Spaces<br>Nearby | <br>Non-LMA | <br>Total |
|---|---|---|---|
| Existing Parking Supply | 600 | 548 | 1,148 |
| ADJUSTMENTS TO DEMAND | | | |
| Existing Staff Demand at Peak | 848 | 551 | 1,399 |
| Net Increase of 3 percent | +23 | +18 | +41 |
| Subtotal | 871 | 569 | 1,440 |
| Full Employment | + 9 | +14 | +23 |
| Subtotal | 880 | 583 | 1,463 |
| Relocated Employees | -21 | +65 | +44 |
| Total Future Demand | 859 | 648 | 1,507 |
| Change from Existing Demand | +11 | +97 | +108 |
| Other LMA Supply (See Note 5 Below) | 71 | -- | 71 |
| NET FUTURE DEFICIT | -188 | -100 | -288 |
| Loss of Off-Site Supply | -- | -266 | -266 |
| Total Future Demand | -188 | -366 | -554 |

Notes:

1. Demand estimates above do not include 10 percent adjustment for space turnover.

2. It is assumed that when transferred to an off-site location, employees are more likely to drive.

3. "Full employment" assumes a constant vacancy rate of 150 positions and includes daytime parking demand only.

4. The future deficit assumes a 266 space reduction in the supply available for staff parking.

5. Between 5 percent and 13 percent of employees who drive to the LMA and park use non-Children's facilities.

## 2. Future Patient/Visitor Supply/Demand Relationship

Based on discussions with Children's staff, the demand for outpatient services is expected to continue to increase as is the level of occupancy of inpatient beds. For the purposes of this analysis, both of these levels are expected to increase by 15 percent over today's conditions by 1993. The analysis of impacts on parking demand resulting from this increase is presented in Table 10.

As shown in the table, the demand for patient and visitor parking is expected to increase by 82 spaces (including the adjustment for space turnover) over existing conditions. This expected growth increases the parking shortfall from 232 spaces to 314 spaces.

## TABLE 10
## FUTURE PATIENT/VISITOR SUPPLY/DEMAND RELATIONSHIP

| Category | Number of People Present | Percent By Car | Peak Demand (spaces) |
|---|---|---|---|
| POTENTIAL GROWTH AREAS (Net Increase: 15%) | | | |
| Outpatient | 488 | 63% | 307 |
| Patient Visitor | 33 | 77% | 261 |
| UNCHANGED | | | |
| Emergency Room | 40 | 80% | 32 |
| Volunteers | 43 | 60% | 27 |
| Business Visitor | 120 | 74% | 89 |
| Total Demand | 1,030 | 69.6% | 716 |
| Practical Supply Adjustment (10%) (to account for space turnover) | | | + 72 |
| Total Adjusted Demand | | | 788 |
| Increase in Demand from Existing Conditions | | | + 82 |
| Existing Available Patient/Visitor Supply in Blackfan Parking Area | | | 474 |
| Shortfall-Demand not met in Blackfan Parking Area (474-788=-314) | | | -314 |

# PARKING MASTER PLAN ALTERNATIVES

## A. INTRODUCTION

In the previous section of this chapter, the estimated future staff parking shortfall was estimated to range between 288 spaces and 554 spaces. Patient/visitor parking requirements for the future were estimated to exceed the supply by 314 spaces. The parking supply options outlined below illustrate the options available to Children's to address this shortfall. The management options which follow are identified as ways to reduce the demand for parking and to improve the overall management of the parking system.

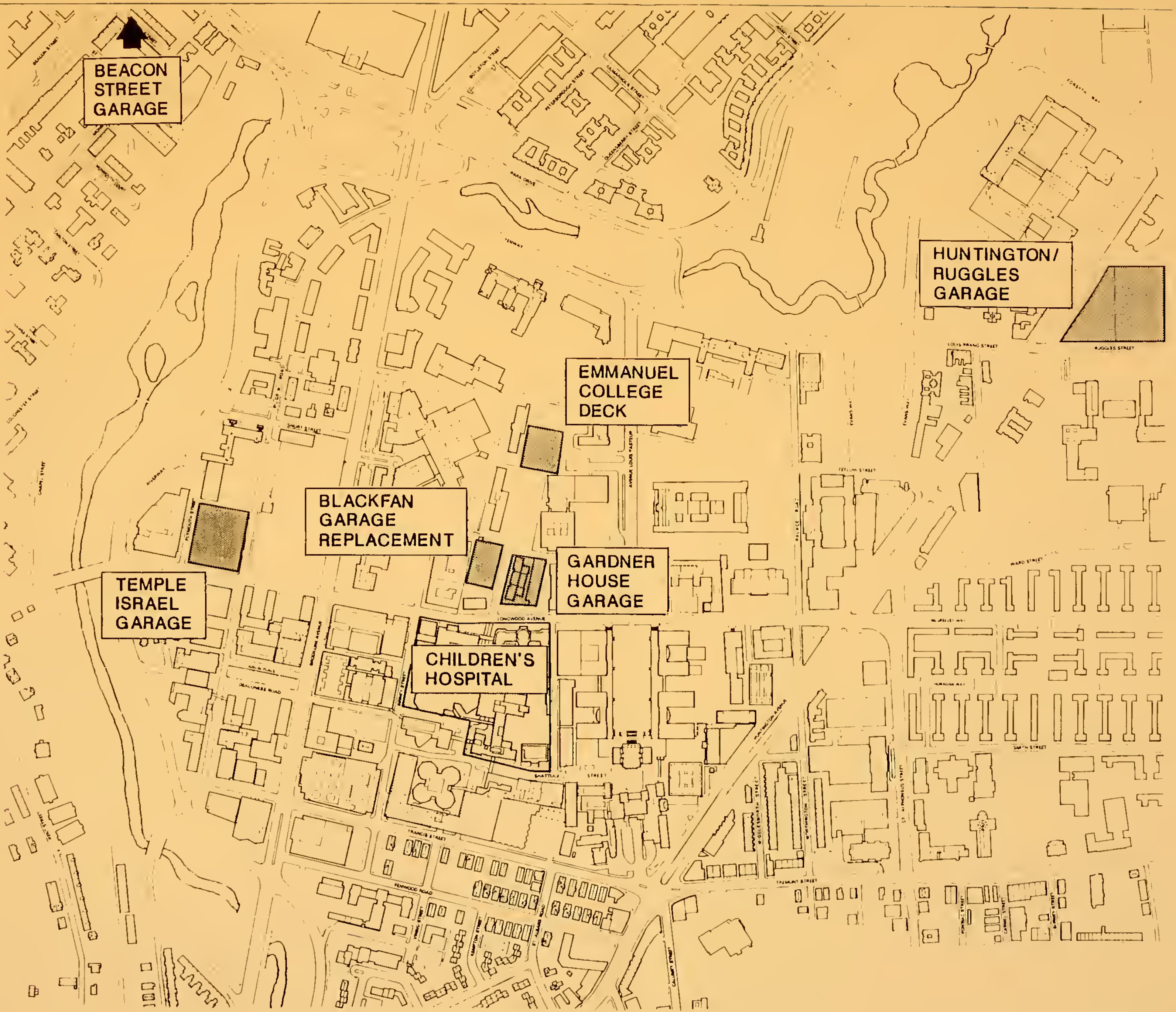
## B. SUPPLY OPTIONS

The master planning team has identified several supply alternatives to address the existing and future parking deficiencies at Children's Hospital. These options, outlined in Table 11, and illustrated in Figure 3, include construction of new parking for patients and visitors within the existing Blackfan parking area and construction of off-site parking for staff, both in nearby lots and in locations requiring shuttle service. The alternatives also fall into different timing categories including immediate actions and actions timed to respond to the future parking requirements outlined above.

### 1. Patient/Visitor Parking Supply Options

The supply options for patients and visitors include: constructing a new parking structure on the site of the existing Gardner House building, providing 430 parking spaces in total and 350 new parking spaces for patient/visitor use; and, the replacement of the existing 434 space Blackfan Garage with a similarly-sized structure.

# Location of Supply Options



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60 Birmingham Parkway Boston MA

0 250
SCALE IN FEET

Fig. 3

# TABLE 10
## PARKING SUPPLY ALTERNATIVES
### Listed in Possible Sequence

| Option | Location | Users Served | Proposed Supply (Spaces) | Net Increase (Spaces) |
|---|---|---|---|---|
| New Deck | Emmanuel College | Staff | 394 | 200 |
| New Garage | Temple Israel | Staff | 750 | 115 |
| New Garage | Gardner House | Patients, Visitors | 430 | 350 |
| Off-Site Garage | Ruggles Street or Beacon Street | Staff | 800 | 400 |
| Replacement Garage | Blackfan Garage | Patients, Visitors | 434 | 0 |

Notes:

1. 100 of the 200 new spaces in the Emmanuel Deck would be allocated to Children's with the other 100 spaces allocated to Beth Israel Hospital.

2. The 750 space Temple Israel garage would provide a total of 525 net new spaces, 115 of which would likely be allocated to Children's, bringing Children's total share on the site to 250 spaces. (This includes the 135 existing spaces leased by Children's.)

3. The timing for an off-site garage needs to be coordinated with and may be affected by other off-site arrangements.

- Advantages and Disadvantages to Patient/Visitor Options

  - Gardner House: The addition of 350 new parking spaces under the Gardner House option would essentially meet the estimated patient/visitor shortfall of 314 spaces. This location has the advantage of being convenient to the main facilities of the hospital and would have minimal disruption to the parking supply in the Blackfan area. The demolition of the Gardner House building would be required, however, as would the relocation of the uses currently occupying this space. One disadvantage to this option is secondary vehicular access. While secondary access via Avenue Louis Pasteur is needed to ensure efficient garage operation, the actual location of the driveway (via Emmanuel College versus via Boston English High School versus behind Harvard's Vanderbilt Hall) is yet to be determined.

  - Blackfan Garage: The Blackfan Garage replacement is being proposed to replace what is currently a structurally-deteriorated parking facility. The replaced garage would improve vehicular circulation and pedestrian comfort in a better-designed facility. The primary disadvantage of this alternative is the need for an interim parking area to accommodate patient/visitor parkers during the construction period. In addition, the cost per net new space in this facility could prove very expensive.

## 2. Staff Supply Options

One alternative available to increase the staff parking supply is the construction of a 394-space parking deck on the site of the existing 194-space Emmanuel College leased parking lot.

Currently, Children's uses 100 spaces of this lot which Beth Israel Hospital uses 94 spaces. This alternative would increase the available supply by 200 spaces, with 100 new spaces allocated to Children's and 100 new spaces allocated to Beth Israel Hospital. Another option within the LMA for new Children's parking is the proposed Temple Israel garage being developed by MASCO. This option, which would provide a total of 750 parking spaces, would increase the LMA supply by 525 spaces and would increase the Children's supply by 115 spaces. Other options which are more long-term in nature would add parking to respond to a future deficit of approximately 400 spaces. These could include a new parking structure above the existing 200 space Beacon Street parking lot or above the existing 213 space Huntington/Ruggles parking lot. Either or both of these alternatives could increase the staff parking supply by at least 400 parking spaces, effectively meeting the projected parking deficiency for Children's staff.

- Advantages and Disadvantages to Staff Supply Options

  - Emmanuel Deck: The primary advantage to the Emmanuel deck is its proximity to the Children's Hospital campus. This added supply could serve as a critical buffer for parkers displaced during the construction of the Temple Israel garage project or the Blackfan garage replacement project.

  - Temple Israel: The Temple Israel project offers some benefits with respect to traffic circulation in that parkers in this facility would drive as far as the site, located on Longwood Avenue near the Riverway and walk the rest of the way to Children's. The location of this parking is also seen as a disadvantage to some, however,

because it is too close to Children's to warrant a shuttle service yet approximately a five minute walk. In addition, 225 LMA parkers will be displaced during the construction process.

- Off-Site Garage: The advantages and disadvantages of constructing off-site parking are similar to those of the Temple Israel garage. The relocation of additional parkers to off-site locations will likely have overall benefits to traffic circulation in the immediate area.

### • Phasing of Parking Supply Alternatives

The supply alternatives described above are intended to be phased to maintain an acceptable level of parking for staff, patients and visitors throughout the next five years. The Emmanuel College deck will temporarily displace parkers while under construction. When completed, these new spaces could accommodate relocated second-shift parkers from the Blackfan area. The deck could also either accommodate displaced parkers from the Temple Israel lot, or the patient-visitor parking demand expected to be unmet until the completion of the Gardner House garage. Finally, a combination of spaces could be used in both the Gardner House garage and the Emmanuel deck to accommodate patient and visitor parkers displaced by the construction of the Blackfan replacement garage. In sum, the supply alternatives identified in this master plan are aimed at better accommodating Children's parkers over the next five years.

## C. PARKING MANAGEMENT

### 1. Introduction

The parking system at Children's Hospital is managed by the Parking and Transportation Office. As described above, the

nearby parking facilities are congested and there are many competing groups of parkers placing demands on the management office. Under the current circumstances, the parking system is well organized and efficiently managed. The opportunities for improving parking management at Children's relate more to response to proposed supply options and to overall LMA-related parking management options.

If the Emmanuel College parking deck is approved, the increase in supply from 100 parking spaces to 235 spaces for staff use would provide the opportunity to remove all staff members from the Blackfan parking area. Once this was accomplished, Children's could more actively publicize that the Blackfan parking area is the designated patient/visitor parking area. It should be noted, however, that second and third shift personnel may be reluctant to park in the Emmanuel parking facility. This may require the provision of additional security or other management actions.

## 2. Children's Hospital Demand Reduction Commitments

As part of the City of Boston review process for access planning on its Research Expansion Project, Children's Hospital made several commitments to reducing the demand for parking at its facilities. These included: 1) a ride board to encourage employees to post their own notices about carpooling; 2) free parking in the Blackfan parking area to vanpools carrying ten or more employees; 3) a 25 percent subsidy for employees' MBTA transit passes, sold at Children's Hospital;[3] 4) and annual monitoring of employee transportation patterns. Within the context of this master plan, it is suggested that Children's pay greater

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[3] Since this program was introduced, the number of monthly passes sold increased by 300 from 500 to 800 passes.

attention to and place more emphasis on ridesharing and transit usage. Certainly, as conditions change in the future, it will be important to identify modifications or enhancements to its demand reduction program.

### 3. Overall Parking Management and Demand Reduction

In terms of overall parking management and demand reduction opportunities, the recently completed Longwood Medical Area Transportation Study[4] recommended many strategies. The following strategies are particularly appropriate for the Parking Master Plan component:

- Raise parking fees for employees.
- Provide and market transit subsidies for employees and visitors.
- Establish ridesharing objectives.
- Start an "Alternatives to Driving Alone to the LMA" campaign.
- Improve MBTA service on the Riverside and Arborway lines.
- Improve MBTA service to Ruggles Station and Roxbury-Dorchester.
- Coordinate a voluntary staggered work hours program.
- Centrally manage the LMA parking system.

Of these, all were endorsed by the MASCO member institutions with the exception of the two parking strategies; raising parking fees for employees and centrally managing the parking system, were recommended for further study. The VHB study stated that,

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[4] Longwood Medical Area Transportation Study, Technical Memorandum #3, Recommended Improvements, Vanasse Hangen Brustlin, Inc., May, 1988.

"A single parking policy, promulgated by MASCO in consultation with the institutions, might be seen by employees as a rational, even if unpleasant, solution to a difficult problem, rather than a simple cut in compensation." A centrally-managed parking system could maximize the utilization of area parking facilities and could reduce traffic congestion in certain locations by removing vehicles from the street system earlier than today.

Children's Hospital strongly endorses the parking and travel demand-reduction recommendations in the MASCO report and supports the completion of a comprehensive parking pricing and parking management evaluation of the LMA. In the interim, the approaches taken herein are deemed necessary and warranted to meet current and future needs.

It should also be noted that Children's recently purchased three 15-passenger vans to transport its employees to/from its Huntington/Ruggles off-site parking lot. This investment demonstrates Children's commitment to doing whatever it can to improve parking conditions for staff, patients and visitors.

## SUMMARY AND CONCLUSIONS

This chapter has presented an overview of existing and short-term future (5 years) parking requirements for the Children's Medical Center. The analysis results indicate a current shortfall of 80 staff parking spaces and 232 patient/visitor spaces. In the next five years, this shortfall is anticipated to increase to up to 534 staff parking spaces and 314 patient/visitor spaces. To address this shortfall, a series of new parking facility options, providing 342 patient/visitor spaces and approximately 530 staff parking spaces were developed.

In terms of reducing parking demand, Children's has expressed its commitment to encouraging its employees to use alternate means of transportation to the LMA. Children's has strongly endorsed several of these strategies as identified in the LMA Transportation Study.

If the supply alternatives identified in this chapter are built, the parking requirements of patients, visitors and staff will be met at least for the next five years and beyond. It is suggested that the process of planning for Children's parking requirements remain an active process, maintaining up-to-date information on the parking system and enabling Children's to respond to changing needs.

## • Pedestrian Door Count Survey

In order to determine the number of persons who come to the hospital on a typical day and to verify prior estimates of daily patient and visitor demand, a pedestrian door count survey was conducted on Tuesday, March 22, 1988. The number of people entering the hospital was counted from 7:00 am until 5:00 pm at the major entrances and exits of the hospital. The following six (6) door locations were included in the survey

- Main Entrance
- Emergency Entrance
- Employee Entrance
- Hunnewell Entrance
- Transfer Ambulance Door
- Bader Entrance

People walking through the doors were placed into four different categories: employees, patient parties, patient visitors and business visitors. A similar survey was also conducted at Gardner House where only business visitors and parents of patients were counted.

On Thursday March 24, 1988 a similar survey was conducted in the Judge Baker Building. All four categories that were counted at the hospital on Tuesday were counted at Judge Baker on Thursday.

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